

WHAT IS CLAIMED IS

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1. A synchronous digital multiplex transmission method comprising the steps of:

- 10 (a) detecting H bytes from an administrative unit group (AUG) forming a synchronous transport module (STM) of a received signal;
- (b) judging whether the received signal is an AU-3 mapping signal of a synchronous optical network (SONET) or an administrative unit (AU)-4 mapping signal of a synchronous digital hierarchy (SDH)
- 15 system, based on values of H1 bytes, H2 bytes and H3 bytes which form the H bytes;
- (c) carrying out an administrative unit (AU)-3 pointer process which uses the H1 bytes, the H2 bytes, the H3 bytes and pointer values thereof, with
- 20 respect to the received signal, when the received signal is judged as the AU-3 mapping signal by said step (b);
- (d) carrying out an AU-4 pointer process which uses a pointer value of the H1 bytes, with respect
- 25 to the received signal, when the received signal is judged as the AU-4 mapping signal by said step (b);
- (e) inserting a pointer value in each of the H1 bytes, the H2 bytes and the H3 bytes, with respect to a transmitting signal, when the received
- 30 signal is judged as the AU-3 mapping signal by said step (b); and
- (f) inserting a pointer value in the H1 bytes, with respect to the transmitting signal, when the received signal is judged as the AU-4 mapping signal
- 35 by said step (b).

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2. A synchronous digital multiplex transmission apparatus comprising:

5 H byte detecting means for detecting H bytes from an administrative unit group (AUG) forming a synchronous transport module (STM) of a received signal;

10 AU-3 mapping judging means for judging whether the received signal is an AU-3 mapping signal of a synchronous optical network (SONET), based on values of H1 bytes, H2 bytes and H3 bytes which form the H bytes;

15 AU-3 pointer processing means for carrying out an administrative unit (AU)-3 pointer process which uses the H1 bytes, the H2 bytes, the H3 bytes and pointer values thereof, with respect to the received signal, when the received signal is judged as the AU-3 mapping signal by said AU-3 mapping judging means; and

20 AU-3 pointer inserting means for carrying out an AU-3 pointer insertion by inserting a pointer value in each of the H1 bytes, the H2 bytes and the H3 bytes, with respect to a transmitting signal, when the received signal is judged as the AU-3 mapping signal by said AU-3 mapping judging means.

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30 3. A synchronous digital multiplex transmission apparatus comprising:

H byte detecting means for detecting H bytes from an administrative unit group (AUG) forming a synchronous transport module (STM) of a received signal;

35 provisioning means for instructing an administrative unit (AU)-3 pointer process of a synchronous optical network (SONET) or an

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administrative unit (AU)-4 pointer process of a synchronous digital hierarchy (SDH) system;

AU-3 pointer processing means for carrying out the AU-3 pointer process which uses the H1 bytes, the H2 bytes, the H3 bytes and pointer values thereof, with respect to the received signal, when the AU-3 pointer process is instructed from said provisioning means;

AU-4 pointer processing means for carrying out the AU-4 pointer process which uses a pointer value of the H1 bytes, with respect to the received signal, when the AU-4 pointer process is instructed from said provisioning means;

AU-3 pointer inserting means for carrying out an AU-3 pointer insertion by inserting a pointer value in each of the H1 bytes, the H2 bytes and the H3 bytes, with respect to a transmitting signal, when the AU-3 pointer process is instructed from said provisioning means; and

AU-4 pointer inserting means for carrying out an AU-4 pointer insertion by inserting a pointer value in the H1 bytes, with respect to the transmitting signal, when the AU-4 pointer process is instructed from said provisioning means.

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4. A synchronous digital multiplex transmission apparatus comprising:

H byte detecting means for detecting H bytes from an administrative unit group (AUG) forming a synchronous transport module (STM) of a received signal;

mapping judging means for judging whether the received signal is an AU-3 mapping signal of a synchronous optical network (SONET) or an

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administrative unit (AU)-4 mapping signal of a synchronous digital hierarchy (SDH) system, based on values of H1 bytes, H2 bytes and H3 bytes which form the H bytes;

5 AU-3 pointer processing means for carrying out an administrative unit (AU)-3 pointer process which uses the H1 bytes, the H2 bytes, the H3 bytes and pointer values thereof, with respect to the received signal, when the received signal is judged as the
10 AU-3 mapping signal by said mapping judging means;

AU-4 pointer processing means carrying out an AU-4 pointer process which uses a pointer value of the H1 bytes, with respect to the received signal, when the received signal is judged as the AU-4
15 mapping signal by said mapping judging means;

AU-3 pointer inserting means for carrying out an AU-3 pointer insertion by inserting a pointer value in each of the H1 bytes, the H2 bytes and the H3 bytes, with respect to a transmitting signal,
20 when the received signal is judged as the AU-3 mapping signal by said mapping judging means; and

AU-4 pointer inserting means for carrying out an AU-4 pointer insertion by inserting a pointer value in the H1 bytes, with respect to the
25 transmitting signal, when the received signal is judged as the AU-4 mapping signal by said mapping judging means.

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5. The synchronous digital multiplex transmission apparatus as claimed in claim 4, comprising:

35 AU-3/AU-4 pointer processing means, integrally including said AU-3 pointer processing means and said AU-4 pointer processing means, for carrying out

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the AU-3 pointer process with respect to the
received signal, when the received signal is the AU-
3 mapping signal, and for carrying out the AU-4
pointer process with respect to the received signal,
5 when the received signal is the AU-4 mapping signal.

10 6. The synchronous digital multiplex
transmission apparatus as claimed in claim 4,
wherein said mapping judging means judges that the
received signal is the AU-4 mapping signal of the
SDH system if the H1 bytes do not have a
15 predetermined fixed value and each of the H2 and H3
bytes have the predetermined fixed value, and judges
that the received signal is the AU-3 mapping signal
of the SONET system if each of the H1, H2 and H3
bytes does not have the predetermined fixed value.

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25 7. The synchronous digital multiplex
transmission apparatus as claimed in claim 5,
wherein said AU-3/AU-4 pointer processing means
comprises:

pointer value extracting means for extracting
the pointer values of each of the H1, H2 and H3
30 bytes;

pointer value selecting means for selecting the
extracted pointer values of each of the H1, H2 and
H3 bytes in the case of the AU-3 mapping signal, and
selecting the extracted pointer value of the H1

35 bytes in the case of the AU-4 mapping signal; and

output means for buffering and outputting data
from the received signal, based on the pointer

values or pointer value selected by said pointer value selecting means.

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8. The synchronous digital multiplex transmission apparatus as claimed in claim 7, wherein said output means includes three circuit
10 sections for independently buffering and outputting the data from the received signal responsive to the corresponding extracted pointer values of the H1, H2 and H3 bytes.

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9. A synchronous digital multiplex transmission apparatus comprising:
20 a H byte detector which detects H bytes from an administrative unit group (AUG) forming a synchronous transport module (STM) of a received signal;

a provisioning section which instructs an
25 administrative unit (AU)-3 pointer process of a synchronous optical network (SONET) or an administrative unit (AU)-4 pointer process of a synchronous digital hierarchy (SDH) system;

an AU-3 pointer processor which carries out the
30 AU-3 pointer process using the H1 bytes, the H2 bytes, the H3 bytes and pointer values thereof, with respect to the received signal, when the AU-3 pointer process is instructed from said provisioning section;

35 an AU-4 pointer processor which carries out the AU-4 pointer process using a pointer value of the H1 bytes, with respect to the received signal, when the

AU-4 pointer process is instructed from said provisioning section;

an AU-3 pointer inserting section which carries out an AU-3 pointer insertion by inserting a pointer value in each of the H1 bytes, the H2 bytes and the H3 bytes, with respect to a transmitting signal, when the AU-3 pointer process is instructed from said provisioning section; and

an AU-4 pointer inserting section which carries out an AU-4 pointer insertion by inserting a pointer value in the H1 bytes, with respect to the transmitting signal, when the AU-4 pointer process is instructed from said provisioning section.

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10. A synchronous digital multiplex transmission apparatus comprising:

a H byte detector which detects H bytes from an administrative unit group (AUG) forming a synchronous transport module (STM) of a received signal;

a mapping identifying section which judges whether the received signal is an AU-3 mapping signal of a synchronous optical network (SONET) or an administrative unit (AU)-4 mapping signal of a synchronous digital hierarchy (SDH) system, based on values of H1 bytes, H2 bytes and H3 bytes which form the H bytes;

an AU-3 pointer processor which carries out an administrative unit (AU)-3 pointer process using the H1 bytes, the H2 bytes, the H3 bytes and pointer values thereof, with respect to the received signal, when the received signal is judged as the AU-3 mapping signal by said mapping identifying section;

an AU-4 pointer processor which carries out an

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5 an AU-3 pointer inserting section which carries
out an AU-3 pointer insertion by inserting a pointer
value in each of the H1 bytes, the H2 bytes and the
H3 bytes, with respect to a transmitting signal,
when the received signal is judged as the AU-3
10 mapping signal by said mapping identifying section;
and

 an AU-4 pointer inserting section which carries
out an AU-4 pointer insertion by inserting a pointer
value in the H1 bytes, with respect to the
15 transmitting signal, when the received signal is
judged as the AU-4 mapping signal by said mapping
identifying section.

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